

Accident Investigation Day Planner

A Guide for Accident Investigation Board Chairpersons

September 2000

**U.S. Department of Energy
Washington, D.C. 20585**



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September 2000



Office of Oversight, EH-2
DOE Accident Investigation Program, EH-21

Introduction

The Accident Investigation Day Planner is intended to help accident investigation board chairpersons manage the many day-to-day activities necessary to bring an accident investigation to a successful completion.

The Day Planner is an administrative tool that will help you organize your time and assist in tracking the many details required to keep an investigation on schedule. It includes a daily calendar, an address book section, an action item section, a valuable tips section, and some checklists that you may find useful.

The section entitled **Starting the Investigation** provides some information that you will need before you begin the investigation. It discusses your role as the board chairperson and the personnel needed to conduct and support the investigation.

The **Tips** section includes lessons learned and tips recommended by previous accident investigation chairpersons. It should be reviewed as you are getting started and periodically throughout the investigation.

The **Calendar** section includes pages for each of the 30 days necessary for a typical accident investigation. You may notice that the dates and days of the week are not included on the calendar. That's because the 30-day investigation begins on the day the appointing official establishes the board's authority, which may fall on any day of the week. That's Day 0. For the next 30 days, the Day Planner will help you schedule your time by providing you a place to keep track of your schedule and by providing information that will help you conduct the investigation.

The information is keyed to the predicted progress of the investigation. For each day, you will see a brief discussion of a topic that is relevant to the investigation at that point and a to-do list of tasks that should be accomplished. Information is not presented in a strict chronology. Because it is impossible to predict the progress of an investigation perfectly, the information presented is keyed to phases of the investigation rather than specific days, so be sure to read ahead.

The **Checklists** section includes startup activity lists that outline board chairperson and administrative coordinator activities as well as a checklist of needed supplies, tools, equipment, and useful documents.

The **Addresses** section includes some addresses and telephone numbers that you may need, as well as space to enter other names and addresses.

The **Action Items** section provides a separate area for you to list topics or items that require follow-up.

We encourage user input. Please send any feedback or requests for future revisions to the address below.

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Starting the Investigation

In addition to the information included on the calendar pages of this Day Planner, some of the overview information in this section may help you in the beginning of the investigation.

Objective

The objective of the accident investigation is to determine what happened, why it happened, and what can be done to prevent recurrence – not to determine individual fault or to fix blame. The results of accident investigations can help managers eliminate underlying causes and prevent similar accidents across the complex.

The Role of the Board Chairperson

The chairperson is the manager of the accident investigation process. The process should be managed as a complex project and should be closely controlled in order to be successful and efficient. The investigation must remain focused on meeting its objective while confronted with a significant workload, finite time constraints, sensitive issues, and a dependence on the cooperation of others. In addition to managing the investigative process, the chairperson must skillfully manage relationships among board members and between the board and external organizations.

While management responsibilities may preclude the chairperson from participating in the detailed investigative tasks, he/she should be fully informed of those activities and be the driving force behind all decisions related to the investigation. The chairperson represents the Department in all matters pertaining to the investigation.

Some of the chairperson's first decisions and actions will greatly influence the entire investigation. The chairperson should be prepared to initially:

- Establish lines of communication with the affected Department of Energy (DOE) Headquarters office, the local DOE office, site contractor(s) involved, local unions, and other governmental agencies, if appropriate.
- Assume custody and control of the accident scene and other evidence.
- Establish a preliminary accident investigation schedule, specifying milestones and deadlines, to include an initial site briefing, tour of the accident scene, and interviews.
- Make assignments and ensure that all board members clearly understand their responsibilities.
- Establish a schedule for meetings held with the board and site management.
- Coordinate with site management any subsequent media/press releases or inquiries.
- Acquire resources for the investigation and ensure that appropriate logistical arrangements are in progress (travel, hotel, office space, and transcription and photographic services).

Resources

Accident investigation boards require resources of many kinds to carry out their work. The chairperson can help facilitate the investigation by identifying key resources required from the start.

DOE Accident Investigation Program Manager. The Accident Investigation Program Manager (referred to throughout this document as “Program Manager”), within the Office of Oversight, is responsible for administering the program on behalf of the Assistant Secretary for Environment, Safety and Health. These responsibilities can be grouped into two categories: (1) general Department-wide program responsibilities for Type A and Type B investigations; and (2) responsibilities associated with Type A investigations conducted by boards appointed by the Secretary of Energy or the Assistant Secretary for Environment, Safety and Health. The former includes developing Departmental policy; maintaining program guidance; coordinating the program with Headquarters and field and program office points of contact; maintaining program-related resource databases; providing or identifying acceptable program-related training; verifying corrective actions; and assisting in disseminating lessons learned to the Department. The latter category includes assisting in the selection, appointment, support, training and qualification, and other activities of Type A accident investigation boards.

Field and Program Office Points of Contact. The point of contact is a DOE staff member assigned the role of liaison with the Program Manager. When an accident occurs, the point of contact assures that the accident scene is preserved until examined and released to the board, that initial written statements from witnesses and responders have been obtained, that pertinent physical evidence has been collected, that photos and a videotape record of the accident scene have been made, and that the medical condition of the injured has been determined as soon as possible after the accident occurs. (If appropriate, the point of contact may request that an autopsy be performed.) The point of contact arranges the briefing and the accident scene tour for the board on the day of their arrival, and will assist the board in obtaining documentation pertinent to the investigation.

Readiness Team. The readiness team consists of personnel at each site who are trained to perform initial response activities immediately following an accident and to begin the investigation process as quickly as possible. They assume responsibility for securing the accident scene and maintaining the integrity of all evidence before the accident investigation board members arrive.

Board Members. DOE Accident Investigation Board members shall be DOE employees who are selected on the basis of their accident investigation process training, experience, and subject matter expertise in areas related to the accident, including knowledge of the Department’s Safety Management System Policy and integrated safety management system. At least one board member shall be a DOE Accident Investigator. The chairperson may assist the appointing official in selecting members. Investigative and technical expertise may be requested from the Office of the Deputy Assistant Secretary for Oversight. Board members are responsible for collecting and analyzing information, determining causal factors, identifying judgments of need, and writing the report.

DOE Accident Investigator. The board member designated as the DOE Accident Investigator is a DOE employee who understands DOE accident investigation techniques and has experience in conducting investigations through participation in at least one Type A or Type B investigation. DOE Accident Investigators must have attended an accident investigation course of instruction that is based on current materials developed by the Office of Deputy Assistant Secretary for Oversight.

Analyst. An analyst is an individual trained in and knowledgeable of the various analytical techniques that can be used to support the accident investigation process, such as the core analytical techniques of barrier analysis, change analysis, events and causal factor analysis, and root cause analysis. Board

members have the responsibility for collecting and analyzing information; however, a dedicated analyst can recommend the proper analytical tools based on the type and complexity of the accident, and process the information using the tools selected, allowing the board members to concentrate on the results.

Technical Advisors. Technical experts can be used to provide specialized expertise not otherwise available to the board. They may be DOE employees, DOE contractors or subcontractors, or outside personnel. They may be site personnel with knowledge of site processes, or the accident itself, or they may be individuals who possess expertise in specialized disciplines, such as metallurgy, chemistry, or electricity. The nature or direction of the investigation will dictate the need for technical experts. A listing of technical experts is available from the Program Manager.

Photographer. A photographer can provide an accurate photographic record of evidence and the accident scene, using techniques not commonly known to investigators.

Legal Advisor. A legal advisor is helpful in dealing with legal issues that may arise, including liability issues and concerns related to the Freedom of Information Act (FOIA) and the Privacy Act (PA). DOE counsel from the operations or field office having cognizance over the site, area, or facility involved generally fulfills this role. If this is not feasible, an attorney from the Office of General Counsel can assist the board.

Medical Advisor. In any investigation involving an injury, illness, or fatality, the medical advisor will be a key person in clarifying medical issues, obtaining information from other physicians, and producing the medical information for the investigation report.

Union Advisor. A union representative can provide information on work practices, facilitate interviews with union members, attend open meetings of the board, and convey to workers the board's desire to assure that the accident is thoroughly investigated.

Administrative Coordinator. An administrative coordinator who is familiar with the administrative and logistical needs and processes for an accident investigation provides essential support to the chairperson. The administrative coordinator should begin making administrative and logistical arrangements immediately so that start-up time is held to a minimum once the board arrives on site. Normal support provided by the administrative coordinator includes reserving a block of rooms at a hotel for board members; arranging for court reporters; locating office space, furnishings, equipment, and supplies; scheduling required site-specific training; obtaining property passes for cameras, recorders, and other equipment; arranging for after-hours access to the site and work space; managing the production of the investigation report; and providing support for the daily activities of the board.

Technical Writer/Editor. A technical writer can facilitate the report-writing process. While board members have primary writing responsibilities, the use of a dedicated writer focuses responsibility for assembling the report, facilitates report preparation, and results in a more cohesive and readable report.

Typist/Text Processor. A board usually needs at least one typist to perform general secretarial and administrative tasks, such as filing, word processing, and answering phones. Often these personnel can be provided by the facility where the investigation is being conducted.

Court Reporters. Using a court reporting service enhances the interview process by increasing the timeliness and accuracy of interview transcripts. The use of court reporters gives all members of the board the opportunity to review interviews in which they did not participate, and provides a transcript that can be used to reconstruct or develop the chronology of events preceding the accident. When an

investigation requires numerous interviews, use of court reporters is essential, and can help prevent the investigation from getting behind schedule in its early stages, when most of the interviewing takes place.

Quality Assurance

Formal quality control measures are necessary because of the seriousness and sensitivity of the work performed by the accident investigation board, and the need for accuracy, thoroughness, and consistency. While the chairperson may implement any quality assurance measures deemed necessary or helpful, the following procedures should be followed on every investigation:

- A thorough effort should be made to ensure that all facts gathered are verified, and that the analysis of those facts results in conclusions that are both consistent and logical.
- When essential portions of the draft report are complete, the board should ensure that each section is consistent with other sections, and that the conclusions are consistent with the facts, analyses, and judgments of need.
- The facts section of the draft report must be provided to the affected DOE and contractor managers for factual accuracy review and validation.
- DOE Order 225.1A, *Accident Investigations*, requires that the report be reviewed, prior to appointing official acceptance, by the Deputy Assistant Secretary for Oversight. This review should be coordinated through the Program Manager. After the review, comments are provided to the appointing official and board chairperson, as appropriate. This review provides a quality check by staff not associated with the accident or the investigation, and it serves as another unbiased review.

Tips and Lessons Learned

Getting Started

- Be explicit about the board members' level of commitment when first briefing the board. Throughout the investigation, board members and advisors must consider the investigation to be their one and only activity and should not expect to be able to deal with home office issues or take time off away from the investigation. The chairperson should resolve any schedule conflicts or, if necessary, discuss possible personnel changes with the appointing official.
- Board members should be advised to assemble their own credentials and materials required to perform the investigation. Examples include security badges, training certificates and cards, medical history, and personal safety equipment.
- Inadequate or slowly developing logistical and administrative support can severely hinder an investigation. It is important to use a skilled administrative coordinator who can quickly establish and implement the board's administrative routines.
- Ensure that space is reserved early that will support securing evidence, be adequate for resources, limit distractions, and protect the integrity of the investigation.
- In the stressful situation created by the board's intense schedule and deliberations, it is essential that the chairperson understand group dynamics to manage the individual personalities of the board members. Care must be taken to ensure that strong-willed personalities do not dominate and influence the objectivity of the investigation, and that all viewpoints are heard and analyzed.
- Some board members may have never worked on an accident investigation or an evaluation team. The chairperson must focus on developing effective team activities, because members may not immediately see their value or may be caught up on their own tasks to the exclusion of the team.
- Be aware of the potential for a conflict of interest on the part of board members, advisors, or consultants (Federal or contractor personnel associated with the investigation) based on their past, present, or planned interests that may diminish their capacity to give impartial, technically sound, objective assistance and advice.
- It is important to designate an individual (i.e., deputy chairperson) to act in the chairperson's place in case of an emergency, and others involved in the investigation should be notified about the temporary delegation.
- The chairperson may find it necessary to issue a memo authorizing costs incurred by board members covering additional travel expenses, rates for hotels that are over per diem, and incidental expenses.
- Establish a daily routine for the board, to include agreed-upon times for beginning and ending each workday. Establish a maximum time duration for the workday (e.g., workday does not exceed 12 hours for safety considerations).
- The chairperson should review assignments made to individual board members frequently to determine if additional resources or reassignments will be necessary.

- The chairperson should use daily meetings to monitor progress and to measure performance against the schedule of activity milestones. The chairperson should ensure that all meetings are structured and follow a predetermined agenda.
- The accident investigation board is not directly responsible for communicating with the press and other external organizations. The chairperson should, however, work closely with the appropriate public affairs office to discuss release of any statements regarding the completion of the board's activities.

Security Issues

- Appropriate access to information should be considered during all aspects of the investigation. It is important to protect sensitive and classified information, the privacy of persons involved in the accident, and the board members' investigation activities. Locate all pertinent investigation materials in a secured location and make sure that a shredder is available to dispose of unneeded materials.
- Arrange for a large conference room to be used by the board members for meetings; viewing photos, videos, and other evidence; conducting analyses; and other investigation activities. This room should be off-limits to non-board members (including janitorial staff) and locked after hours.
- Consider the security clearance requirements at the accident site when selecting board advisors and consultants. Problems arise when individuals do not have the required level of security clearance for access to the facility and onsite escorts are needed.

Status Meetings

- Establishing a routine meeting schedule with the appropriate site management can provide an effective method for exchanging information, summarizing the status of the investigation, and addressing any problem encountered in a timely manner.
- Schedule a block of time on the agenda for the daily board meeting to discuss the information obtained during the interviews conducted that day and how that information factors into the analysis of the investigation.
- Establishing a weekly conference call with managers representing DOE-HQ, the local operations office, contractors, and selected members of the board is recommended. A written status report should be prepared and faxed to the participants the day before the conference call is scheduled.
- The initial briefing to the board should review site hazards, required personal protective equipment and training, and placing equipment in a safe configuration.

Interviewing

- Although interviews need to be conducted as soon as possible in the early stages of the investigation, a structured list of questions should be developed by the board and approved by the chairperson to ensure that all aspects of the information needed are included.
- Audiotaping the interviews has not been successful on past investigations. It is very labor intensive and time consuming to transcribe the tapes, and the reliability of information is questionable. Using court reporters is a preferred method of documenting the interviews.

- Interview transcripts should be reviewed for accuracy by the interviewee. By using court reporters these transcripts are generally available within 24 hours and are very accurate.
- For less formal interviews, the interviewer can take notes or use a secretary with shorthand skills.
- Begin interviewing as soon as possible so that individuals realize they will be sources of information, not targets of blame.
- Witnesses should understand that follow-up interviews are routine, and are not a reflection on their statements.
- Ensure that the interviewee is at ease during the interview. Some suggestions for raising the comfort level is giving the interviewee an agenda in advance, explaining the role of the court reporter, having a portion of the interview “off the record” without the court reporter present, dressing appropriately, and interviewing senior managers in their own offices.
- The investigator should first get the overview picture of the accident, and then expand information with careful questioning.
- Having a set of photographs or sketches of the accident scene can be helpful during the interviews.
- Consider establishing a telephone “hotline,” with access controls, where people can leave a voice message, request to be interviewed, or provide information in confidence.

Evidence Collection

- Never discard anything — even items that appear trivial at first may prove useful later in the investigation.
- As soon as possible, determine the medical condition and fitness-for-duty status of those injured in the accident and others who are directly involved in the accident.
- If the accident occurs in an area that makes securing the accident scene difficult, the walk-through may be the sole opportunity to collect and preserve critical evidence.
- Carefully document evidence at the time it is obtained or identified.
- Enlist the aid of technical experts when making decisions about handling or altering physical evidence.
- Intact and complete evidence is the foundation of a successful accident investigation.
- Fluids emanating from equipment or vehicles may quickly evaporate or be absorbed by surrounding materials. Therefore, fluid samples should be taken quickly.

Conducting Analyses

- Delegating responsibility for complex analysis to one individual can produce inferior results. Analyses are strengthened by the input of a variety of individuals, trained and experienced in the core analytical techniques, who are dedicated to serve as analysts.

- A good method for displaying the facts is to list them on multi-colored notes and put them up on a wall. This method is used to develop the events and causal factors chart.
- Conduct preliminary analyses early in the investigation to help direct the facts collection process. Interaction between the analysis team and the interviewers is critical.
- The purpose of any analytic technique in an accident investigation is to answer the question – “how did it happen?”
- The process of determining causal factors seeks to answer the question – “why?”
- Root cause analysis should be conducted for every accident, regardless of severity or complexity. Minor incidents often foreshadow the occurrence of more serious events.
- The board should avoid placing individual blame for an accident.
- The board has an obligation to seek out and analyze deficiencies in management systems.
- Investigators should not work independently to derive judgments of need. All judgments of need should be derived in groups of two or more, and agreed to be the entire board, to assure that merits and validity of each are openly discussed and that the judgments of need flow from the facts and analyses of the investigation.
- In change analysis, differing events and conditions are systematically reviewed and analyzed to determine potential causes.
- In any accident, there may be a series of causal factors, one leading to another. One of the most critical responsibilities of the investigation team is to pursue each factor in the series, until the board is assured that actual root causes are identified. Regardless of which analytical technique is used, the main focus of the board should be finding concise and valid root causes.

Administrative Coordinator Activities

- Obtain a current list of phone and fax numbers for pertinent individuals and offices at DOE Headquarters and the local operations office, and obtain copies of site and local phone directories.
- Protect all records relating to the accident until the investigation activities or analysis of those records determine that they are not relevant to the accident.
- Create a roster of board members and advisors that includes mailing address (no P.O. box numbers), and office, fax, and home phone numbers.
- Obtain different colors of paper for printing the draft versions of the report so that they can be identified immediately by color.

Report Writing and Production

- Many previous boards have conducted thorough and competent accident investigations, yet failed to communicate the results effectively in the report. As a result, the root causes, judgments of need, and lessons learned often appear unsupported or are lost in a mass of detail.

- Draft the report outline, assigning board members clear writing responsibilities, as soon as possible.
- The prologue should interpret the accident's significance as it relates to the affected site, other relevant sites, field offices within the DOE complex, and DOE Headquarters.
- The Executive Summary should not include a laundry list of all the facts, conclusions, and judgments of need. Rather, to be effective, it should summarize the important facts, causal factors, and judgments of need.
- Site and facility diagrams and organizational charts for relevant management systems may be appropriate to include either in the Introduction or in the Facts and Analysis section. However, include this information only when it is needed to clarify the role of related organizations in the context of the accident.
- Avoid lengthy narratives. It is more important to lay out the facts in a clear, concise manner understandable to the reader. Precede the bulleted facts with a statement identifying them as such, and include facts only – not conjecture, assumptions, analysis, or opinion.
- Encourage the authors to consult with each other often so they are familiar with the general content of each section, and can then build on the sections presented sequentially in the report before their own sections.
- It is recommended that a board member begin identifying and developing photographs and sketches, including captions, as early as possible, as these are more time-consuming than might be anticipated.
- Reviewing reports from previous investigations can be helpful when determining report format and content. However, since each accident is different, caution should be exercised not to make assumptions based upon the results of other investigations.
- A previous chairperson released the final draft report to selected officials during the outbriefing, and later discovered that the report had been reproduced and widely distributed both on site and off site. Additionally, the report was being referenced as if it were official and complete before it had been accepted by the appointing official and approved for distribution.
- As long as the report remains in draft form, it is the chairperson's responsibility to control its distribution.
- The chairperson should ensure that all the materials required for final report preparation will be available wherever that report will be produced. The computer disks (including backup disks) of the most current report draft and appendices must be secured. Also, "camera-ready" copies of original graphs, charts, the report cover, and all other support materials must be obtained.
- The final report may require several more days of intensive effort to incorporate comments received from independent reviewers, site management, and the technical editor. The chairperson will need to determine how these comments will be handled. If the board members have returned home to their normal duties, it may be necessary to reconvene the board to ensure that the comments were properly resolved.

Investigation Closeout

- The chairperson should determine which of the board members and advisors can be released immediately after the final draft report is signed by the board members. The chairperson should determine who may be needed to participate in briefings and to complete the final report.
- The chairperson should assure that all of the items provided to the board by the site are returned; the work space evacuated; and, if necessary, formal control of the accident site is returned to the contractor(s) upon completion of the investigation activities.
- The chairperson should write appreciation letters to be distributed to everyone assisting in the onsite investigation activities. A separate appreciation letter should be drafted for the board members, advisors, and administrative support personnel and their managers.
- The chairperson should ensure that the board can be reached by overnight mail, fax, and telephone, and that members will be available, even if on travel or vacation, until the report is accepted by the appointing official.

Year 2003

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Year 2004

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Year 2005

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<p>April</p> <p>S M T W T F S</p> <p>1 2</p> <p>3 4 5 6 7 8 9</p> <p>10 11 12 13 14 15 16</p> <p>17 18 19 20 21 22 23</p> <p>24 25 26 27 28 29 30</p>	<p>May</p> <p>S M T W T F S</p> <p>1 2 3 4 5 6 7</p> <p>8 9 10 11 12 13 14</p> <p>15 16 17 18 19 20 21</p> <p>22 23 24 25 26 27 28</p> <p>29 30 31</p>	<p>June</p> <p>S M T W T F S</p> <p>1 2 3 4</p> <p>5 6 7 8 9 10 11</p> <p>12 13 14 15 16 17 18</p> <p>19 20 21 22 23 24 25</p> <p>26 27 28 29 30</p>
<p>July</p> <p>S M T W T F S</p> <p>1 2</p> <p>3 4 5 6 7 8 9</p> <p>10 11 12 13 14 15 16</p> <p>17 18 19 20 21 22 23</p> <p>24 25 26 27 28 29 30</p> <p>31</p>	<p>August</p> <p>S M T W T F S</p> <p>1 2 3 4 5 6</p> <p>7 8 9 10 11 12 13</p> <p>14 15 16 17 18 19 20</p> <p>21 22 23 24 25 26 27</p> <p>28 29 30 31</p>	<p>September</p> <p>S M T W T F S</p> <p>1 2 3</p> <p>4 5 6 7 8 9 10</p> <p>11 12 13 14 15 16 17</p> <p>18 19 20 21 22 23 24</p> <p>25 26 27 28 29 30</p>
<p>October</p> <p>S M T W T F S</p> <p>1</p> <p>2 3 4 5 6 7 8</p> <p>9 10 11 12 13 14 15</p> <p>16 17 18 19 20 21 22</p> <p>23 24 25 26 27 28 29</p> <p>30 31</p>	<p>November</p> <p>S M T W T F S</p> <p>1 2 3 4 5</p> <p>6 7 8 9 10 11 12</p> <p>13 14 15 16 17 18 19</p> <p>20 21 22 23 24 25 26</p> <p>27 28 29 30</p>	<p>December</p> <p>S M T W T F S</p> <p>1 2 3</p> <p>4 5 6 7 8 9 10</p> <p>11 12 13 14 15 16 17</p> <p>18 19 20 21 22 23 24</p> <p>25 26 27 28 29 30 31</p>

Monthly Calendar

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Monthly Calendar

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Day O

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The role of the appointing official

Authority to appoint accident investigation boards and to assign individuals to conduct accident investigations resides with the appointing official, and must be established in writing. The written authorization shall include the scope of the investigation, the names of the individual board members being appointed, a specified completion date for the final report, and any special provisions deemed appropriate.

No persons serving on the board should have a conflict of interest, or have direct or line management responsibility for the facility, area, or activity involved in the accident. The board cannot include both a supervisor and his/her subordinate.

To Do

- Accept the appointment by letter, as board chairperson.
- Attend the briefing by the appointing official.
- Identify all appropriate site authorities.
- Contact the site and obtain briefing from the Program Manager and field or program office point of contact.
- Assist in selecting, notifying, and briefing board members and consultants/advisors.
- Separate accident investigation activity from usual work; assign acting person for usual work.
- Request the Program Manager to search for information about similar accidents.
- Establish a preliminary accident investigation schedule, including milestones and deadlines.
- Travel to the accident site.

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Day 1

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Arriving at the accident site

Arrange to have an in-briefing with local DOE/contractor management. In this meeting:

- Introduce board members, advisors, and support staff.
- Establish a liaison with the appropriate personnel on the site to ensure that clear lines of communication and responsibility are established.
- Request that the local DOE/contractor management present preliminary facts, witness statements, etc.
- Assess the adequacy of access and ES&H controls at the accident scene.
- Establish information-control protocols (including press releases) with site management.
- Establish a regular meeting schedule with site management.
- Determine that logistical support has been established.

Visit the accident scene with board members/field or program office point of contact/readiness team to:

- Assume formal control of the accident scene.
- Identify any potential hazards at the accident scene.
- Determine the need for additional photographic services.
- Make management decisions regarding the accident site.
- Secure the scene and all forms of evidence and maintain a chain of custody.

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Day 2

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Interviewing

Human evidence can be extremely delicate. Witnesses can forget, overlook, or fail to recognize evidence of critical value to the investigation, and over time they can begin to rationalize what has happened. A witness interviewing schedule should be established as soon as possible, and interviewing should begin as soon as practical. A neutral location free from distractions should be used for these interviews. Each board member is responsible for assuring that the interviews are effective and productive. Court reporters should be used to document key interviews to ensure accuracy and quickly disseminate main points to board members.

Good interviewing techniques include planning the interview strategy ahead of time. Know what information is needed and what questions to ask. Establish a rapport before the interview starts. Ask for a narrative of the interviewee's firsthand knowledge, and ask open-ended questions.

To Do

- Attend scheduled meetings with the site.
- Review the list of standardized interview questions.
- Begin interviews.
- Determine if additional resources are required.
- Develop an initial document request list and submit it to the site.
- Prepare the agenda for the daily board meeting.
- Review the action item log.
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Day 3

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Obtain needed information

Be as specific as possible when requesting information from the site. Once received, all documents should be logged into the investigation file, and a check-in/out procedure should be established.

Board members should be encouraged to check the investigation file before making a document request and regularly exchange information they have obtained, thereby avoiding duplication of effort.

It is advisable for at least one board member or an advisor to have access to the occurrence reporting system (ORPS) to get information on other related accidents.

If deemed appropriate, issue a statement for release to all site employees that outlines the purpose and scope of the accident investigation. Solicit information pertaining to the accident and list the "hotline" phone number.

To Do

- Attend scheduled meetings with the site.
- Make sure an investigation site point of contact has been designated.
- Arrange for a telephone "hotline" for calls regarding accident, if necessary.
- Issue a public announcement calling for information.
- Review the list of interviewees.
- Review initial facts, analyses, and findings.
- Prepare the agenda for the daily board meeting.
- Review the action item log.

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Day 4

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Reviewing standards and requirements

The investigators should consider the full range of management systems and operational controls, beginning at the first-line supervisor level, up to and including organization directors, site managers, and Headquarters personnel, as appropriate, but this focus should not be directed toward individuals.

The investigators should apply the criteria for each of the principles of safety management established by the Department when deciding who to interview, what to ask, what documents to collect, and what facts are pertinent to the accident.

To Do

- Attend scheduled meetings with the site.
- Develop a chronology of events for the accident.
- Begin Draft 1 preparation of the report (outline prepared, writing assigned).
- Update the document request list as facts are obtained and analyzed.
- Prepare the agenda for the daily board meeting.
- Review the action item log.
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Day 5

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Collecting evidence

All the evidence that is collected forms the basis for the investigation analyses and conclusions. Three general types of evidence will be collected:

- Human evidence (witness statements and observations).
- Physical evidence (matter related to the accident, such as equipment, parts, debris, fluids, etc.).
- Documentary evidence (paper and electronic information).

Establish a protocol and assign responsibility for control and custody of evidence that will ensure accountability and preservation. Critical evidence can be lost if it is prematurely altered or discarded. Assign a board member to closely monitor all analyses and testing of physical data.

To Do

- Ensure that evidence is being handled properly.
- Continue interviews.
- Review the interview list and standardized questions.
- Attend scheduled meetings with the site.
- Review facts, analyses, and findings.
- Continue Draft 1 preparation of the report.
- Prepare the agenda for the daily board meeting.
- Review the action item log.
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Day 6

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Preliminary analyses

Conducting preliminary analyses early in the investigation will help identify gaps in the information and will assist in developing questions used when conducting interviews. The analysis is also a critical prerequisite for developing and supporting conclusions, and thus its importance cannot be overstated.

The chairperson should consider the following:

- Obtaining more than one person trained in the analytical techniques, either as board members or as advisors to the board.
- Starting the events and causal factors and the barrier and change analyses as soon as the initial facts are available.
- Consider using accident investigation tools or software as an aid in identifying information gaps and developing analyses and causal factors.

To Do

- Attend scheduled meetings with the site.
- Continue interviews.
- Perform an analysis of the preliminary facts.
- Complete the first draft of the accident chronology.
- Continue Draft 1 preparation of the report.
- Select analytical methods.
- Prepare the agenda for the daily board meeting.
- Review the action item log.
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Day 7

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Reporting investigation status

The chairperson should consider establishing a periodic (i.e., weekly) status meeting with the appointing official and site upper management. A conference call could provide an opportunity to discuss the status and schedule of the investigation and to report any potential problems.

A written status report may also be produced periodically and distributed to managers, followed by the scheduled conference call with the appropriate personnel participating.

To Do

- Attend scheduled meetings with the site.
- Prepare and distribute the weekly status report.
- Conduct a weekly status meeting with the appointing official and site upper management.
- Review the list of interviewees.
- Review facts, analyses, and findings.
- Continue Draft 1 preparation of the report.
- Prepare the agenda for the daily board meeting.
- Review the action item log.
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Day 8

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Team review of facts and analysis

The chairperson should encourage board members to read interview transcripts, frequently review the facts and analyses, and brainstorm preliminary conclusions. This will ensure that all issues are addressed and that the investigation remains focused and within scope.

Frequent review of this information during report writing is considered very helpful to ensure that board members have considered all the facts and analyses as they pertain to each individual's writing assignment.

To Do

- Attend scheduled meetings with the site.
- Review facts and analyses, to include the events and causal factors chart.
- Review the list of interviews.
- Continue Draft 1 preparation of the report.
- Prepare the agenda for the daily board meeting.
- Review the action item log.
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Day 9

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Site investigations and information requests

Site organizations or contractors may want to conduct their own internal investigation of the accident and may desire information from the board. Type A and B accident investigations have priority over site lead investigations and may relieve the local organization of any requirement to conduct their own investigation.

The chairperson must ensure that internal investigations or information requests do not impede the board from conducting a timely and independent investigation.

To Do

- Attend scheduled meetings with the site.
- Review and update the board's protocol for controlling information.
- Review facts and analyses.
- Continue interviews, as necessary.
- Continue Draft 1 preparation of the report.
- Prepare the agenda for the daily board meeting.
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Day 10

Date: _____ Day: _____

The accident investigation report

The purpose of the accident investigation report is to clearly and concisely convey the results of the investigation in a manner that will help the reader understand what happened, why it happened, and what can be done to prevent a recurrence. Investigation results are reported without attributing individual fault or proposing punitive measures. The report should constitute an accurate and objective record of the accident and should provide complete and accurate details of the investigation process, analytical methods, conclusions reached, and judgments of need to correct deficiencies that may have prevented the accident.

To Do

- Attend scheduled meetings with the site.
- Continue interviews, as necessary.
- Send Draft 1 of the report to board members for review.
- Perform and document additional analyses as necessary.
- Prepare the agenda for the daily board meeting.
- Review the action item log.
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Day 11

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Validating facts

As facts are gathered and reviewed, first impressions should not guide the investigation; rather, the board should review all facts in the totality of the accident’s circumstances to ensure that only truly factual information is considered in determining what actually occurred. Facts must be constantly reviewed for relevance and accuracy, and must be validated. Not all information can be established as factual with complete certainty. Therefore, the board should identify areas of uncertainty in the report.

Relevant facts should not be overlooked. Investigators must examine evidence critically and establish an objective and independent account of the accident.

To Do

- Attend scheduled meetings with the site.
- Ensure that Draft 1 of the report is received by the administrative coordinator.
- Review the interview list to determine if additional interviews are necessary.
- Prepare the agenda for the daily board meeting.
- Review the action item log.
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Day 12

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Assessing the process of the investigation

The chairperson should arrange for periodic progress reviews with board members during the investigation.

Some key questions to consider when assessing the investigation progress are:

- Is the investigation on schedule?
- Is the investigation within scope?
- Are the board members focused and effective?
- Are additional resources needed?

It is important that time constraints do not compromise the quality of the investigation or the report.

To Do

- Attend scheduled meetings with the site.
- Review and comment on Draft 1 of the report.
- Review the events and conditions and supporting facts/evidence.
- Assess the progress of the investigation.
- Prepare the agenda for the daily board meeting.
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Day 13

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Analyzing facts

Most of the analyses are done using tools such as change analysis, barrier analysis, root cause analysis, and events and causal factors analysis. The results of applying each technique should be identified in the report. If the board arrives at different conclusions from each type of analysis, the report should explain how they fit together. Analysis focuses on the facts and leads to defining causes and conclusions. The board must thoroughly document the methodology it uses to arrive at its understanding of the facts, conditions, and circumstances, and to identify inferences developed to support conclusions, opinion of causes, and judgments of need.

To Do

- Attend scheduled meetings with the site.
- Ensure that comments on Draft 1 of the report are received by the administrative coordinator.
- Review analytical methods.
- Prepare the agenda for the daily board meeting.
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Day 14

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Report format and content

The investigation report format should include the following:

- **Executive Summary** is written for the executive or general reader who may be relatively unfamiliar with the subject matter.
- **Introduction** normally contains (1) a brief description of the accident and its results and a statement regarding the authority to conduct the investigation; (2) a brief description of the facility, area, or site; and (3) a description of the investigation’s scope, its purpose, and the methodology used in conducting the investigation.
- **Facts and analysis** are logically organized into subsections according to relevant topical areas or safety management systems, stating the facts related to the accident, the analysis of those facts, and the determination of causal factors.
- **Conclusions and Judgments of Need** include conclusions in the form of statements of what was found by the board, and identified needs (actions) required to prevent future accidents.

To Do

- Attend scheduled meetings with the site.
- Prepare and distribute the weekly status report.
- Conduct a weekly status meeting with the appointing official and site upper management.
- Review the interview list to determine if additional interviews are necessary.
- Prepare the agenda for the daily board meeting.
- Review the action item log.

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Day 15

Date: _____ Day: _____

Arriving at conclusions

Conclusions are significant deductions derived from the investigation’s analytical results. Conclusions are derived from and must be supported by the facts plus the results of testing and the various analyses conducted. They are statements that answer two questions the accident investigation addresses: What happened and why did it happen? Conclusions always include concise recapitulations of the causal factors (direct, contributing, and root causes) of the accident determined by the analysis of facts.

Where appropriate, conclusions may be used to highlight positive aspects of performance.

To Do

- Determine if scheduled meetings with the site can be discontinued.
- Review and comment on Draft 2 of the report.
- Review the preliminary conclusions.
- Prepare the agenda for the daily board meeting.
- Review the action item log.
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Day 16

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Developing judgments of need

The judgments of need are the board’s judgment as to the managerial controls and safety measures necessary to prevent or minimize the probability or severity of a recurrence. This is the only reason for judgments of need. The board should avoid generic statements and focus on processes and systems, not individuals. Judgments of need should be stated in clear, concise, and direct language; should address each causal factor (root and contributing); and should provide the basis for corrective actions.

Judgments of need should not include site readiness process issues (e.g., site preservation, evidence control) unless they have a direct impact on the accident. These concerns should be noted in a separate memorandum to the appointing official.

To Do

- Ensure that comments on Draft 2 of the report are received by the administrative coordinator.
- Prepare the agenda for the daily board meeting.
- Review the action item log.
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Day 17

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Exhibits and appendices

Figures, graphs, charts, and diagrams can add value to the investigation report and should be designed to promote quick and easy comprehension. Photographs should have captions and carry labels, measurements, or other marks to aid in the interpretation.

Appendices are added as required to provide supporting information. As a general rule, the amount of documentation in the appendices should be limited. The appendices should not be more comprehensive than the report itself. If there is any doubt whether there is benefit for including material as an appendix, it should probably be omitted. All appendices must be referenced in the report.

To Do

- Review and comment on Draft 3 of the report.
- Assure that graphs, charts, and appendices have been integrated into the report.
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Day 18

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Factual accuracy review

When the accident investigation report has been drafted in its final form, but before it is sent to the appointing authority for acceptance, the facts portion of the report should be reviewed by the affected organizations at Headquarters and at the site, to validate the factual accuracy of the contents of the report. It may be necessary to have other sections reviewed as well. This review is important for ensuring an accurate report and enhancing acceptance by all affected parties.

Distribution of the draft report needs to be carefully controlled. It is recommended that the factual accuracy review be held in an area where numbered copies of the report can be controlled with a check-out/check-in procedure.

To Do

- Ensure that comments on Draft 3 of the report are received by the administrative coordinator.
- Ensure that the draft report is reviewed for privacy.
- Ensure that a classification review is completed of the draft report.
- Conduct a factual accuracy review.
- Review conclusions and judgments of need.
- Begin preparing outbriefing materials.
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Day 19

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Requirements verification analysis

The verification analysis determines whether the flow from facts to analysis, conclusions, and judgments of need is logical. The goal is to eliminate conclusions that are not based on facts. One approach is to compare the facts, analysis, conclusions, causes, and judgments of need on a wall chart, and validate the continuity of facts through the analysis and conclusions to the judgments of need. This method also identifies any misplaced facts, insufficient analyses, and unsupported conclusions or judgments of need.

To Do

- Conduct a requirements verification analysis.
- Continue preparing outbriefing materials.
- Review and comment on the draft report.
- Review factual accuracy comments with the board.
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Day 20

Date: _____ Day: _____

Minority opinions

If a board member(s) cannot agree on the conclusions reached at the end of the investigation, it is that board member's right to prepare a minority opinion. The chairperson should make every effort to understand the logic underlying the differing opinions and consider what changes might resolve the conflict, but if the conflict cannot be resolved, the chairperson must accept the opinion and include it in the final report. The minority report should only address these points of variance.

To Do

- Draft report comments are due to the administrative coordinator.
- Draft appreciation letters for site support.
- Send a copy of the draft final report to the Program Manager for quality review.
- Prepare and distribute the weekly status report, if necessary.
- Conduct the weekly status meeting with the appointing official, if necessary.
- Obtain board members' signatures for the report.
- Prepare to depart the site.
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Evening	_____

Day 21

Date: _____ Day: _____

Archiving records

Permanent records must be maintained for Type A and Type B accident investigations, in accordance with DOE record retention requirements. Accident investigation reports do not contain all of the records and backup data associated with the investigation.

One of the final activities of the board will be to review and prepare the archive materials for long-term storage. All factual material and analysis products should be included, such as logbooks, board meeting minutes, correspondence, field notes, sketches, witness statements (including tapes, if used), analysis charts, photographs, location and custody of physical evidence, and various forms completed during the investigation.

The chairperson should ensure that the archive files have been reviewed, purged, and made ready for shipment to the appropriate storage location.

To Do

- Review the archive files and prepare for shipment.
- Finalize a report production schedule.
- Incorporate the quality review comments into the report.
- Depart the site.
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Evening	_____

Day 22

Date: _____ Day: _____

Releasing information to the public

The chairperson should instruct the board members not to communicate with the press or other external organizations regarding the investigation. This is the responsibility of the board chairperson until the final report is released, and he/she should work closely with a person designated by the site to provide other information, such as how to best produce and release any statement to site employees and the public.

To Do

- Continue to incorporate comments into the final draft report.
- Draft a transmittal memo to the appointing official.
- Establish a point of contact at the site for press releases.
- Schedule final report production.
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Evening	_____

Day 23

Date: _____ Day: _____

Draft final report preparation

The chairperson is responsible for final editing and production of the report, with assistance from administrative support staff.

The chairperson is also responsible for presenting the draft final report to the appointing official for formal acceptance, after which the report must be finalized and distributed.

When the final report has been produced, the chairperson should distribute a personal copy to each member of the accident investigation team with an appreciation letter attached.

To Do

- Draft final report preparation.
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Evening	_____

Day 24

Date: _____ Day: _____

Releasing the board members

The chairperson should determine when each of the board members and advisors can be released.

To Do

Draft appreciation letters for board members, advisors, and support staff.

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Evening	_____

Day 25

Date: _____ Day: _____

To Do

- Review and incorporate comments received on the draft final report.
- Schedule a briefing with the appointing official.
- Draft transmittal memo(s) for report distribution.
- Transmit the draft final report to the appointing official.
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Evening	_____

Day 26

Date: _____ Day: _____

To Do

- Brief the appointing official on the results of the investigation.
- Review and incorporate comments received on the draft final report.
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Evening	_____

Day 27

Date: _____ Day: _____

Lessons learned

The purpose of conducting accident investigations is to determine the system deficiencies that allowed the accident to occur, so that those deficiencies can be corrected and similar accidents can be prevented. Summaries of deficiencies and the recommended corrective actions are identified as “lessons learned.” In the interest of preventing recurrence of accidents, lessons learned are disseminated DOE-wide through reports, workshops, newsletters, and electronic means, as appropriate, to ensure that the results of investigations have the greatest effect for continuous improvement in environment, safety and health performance.

The Program Manager assists in disseminating lessons learned from accident investigations.

To Do

- Review and incorporate comments on the draft final report.
- Identify “lessons learned.”
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Evening	_____

Day 28

Date: _____ Day: _____

Appointing official's report acceptance

The investigation is considered complete when the appointing official accepts the report, including a minority report, if appropriate. The appointing official indicates formal acceptance by signing and dating an acceptance statement. This acceptance statement is incorporated into the final report.

The chairperson usually drafts the acceptance statement for the appointing official.

To Do

- Finalize the acceptance statement.
- Finalize the report.
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Evening	_____

Day 29

Date: _____ Day: _____

Outbriefing following report acceptance

The chairperson should conduct briefings on the investigation's outcome for DOE and contractor line management at the site of the accident. Accident investigation participants may attend these briefings. The briefings should cover:

- The scope of the investigation as provided in the appointment letter.
- The investigation's participants, including any subject matter experts or other consultants.
- A brief summary of the accident (what happened).
- Direct, contributing, and root causes (why it happened).
- Judgments of need (what needs to be corrected).
- Organizations that should be responsible for corrective actions.

To Do

- Conduct the outbrief with site DOE and contractor management.
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Evening	_____

Day 30

Date: _____ Day: _____

DOE Headquarters briefing

Upon completion of the investigation activities, the chairperson and senior management of the site at which the accident occurred conduct a briefing to DOE Headquarters to present the board's conclusions and judgments of need. Other briefings may be provided by the chairperson, including briefing the appointing official.

To Do

- Conduct a briefing for Headquarters.
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Evening	_____

Chairperson Start-up Activities

Description of Activity	Name of Designated Lead
Attend the briefing by the appointing official	HQ
	Site
	Other
Assist in selecting, notifying, and briefing board members and consultants/advisors	HQ
	Site
	Other
Identify all appropriate site authorities	HQ
	Site
	Other
Obtain details of the accident from the site readiness team leader and other site parties	HQ
	Site
	Other
Ensure that adequate evidence preservation and collection activities were initiated	HQ
	Site
	Other
Begin identifying and collecting background and factual information	HQ
	Site
	Other
Ask the Program Manager to search for information about similar accidents	HQ
	Site
	Other
Review all forwarded site and board member information	HQ
	Site
	Other
Reassign normal business commitments	HQ
	Site
	Other
Establish a preliminary accident investigation schedule, including milestones and deadlines	HQ
	Site
	Other
Contact selected board members, consultants/advisors, and site personnel	HQ
	Site
	Other
Arrange travel for self and expedite board travel arrangements	HQ
	Site
	Other
Establish administrative support/determine that logistical support for the accident investigation is established	HQ
	Site
	Other

Administrative Coordinator Start-up Activities

Description of Activity	Name of Designated Lead
Make hotel selection and reserve a block of rooms for the board	HQ
	Site
	Other
Determine site/field office points of contact for administrative and logistical support	HQ
	Site
	Other
Arrange for local court reporter support for interviews	HQ
	Site
	Other
Arrange for office/work space and furnishings for the board	HQ
	Site
	Other
Arrange for a large, dedicated conference room that can be locked when not in use by the board	HQ
	Site
	Other
Arrange for several small, hard-walled offices to be used for conducting interviews	HQ
	Site
	Other
Arrange for security badges/passes for members of the board	HQ
	Site
	Other
Arrange for property permits for personal equipment (cameras, laptops, etc.) for members of the board	HQ
	Site
	Other
Arrange for specific security, access, safety, and health training, as required	HQ
	Site
	Other
Arrange for dedicated telephone services and a fax machine	HQ
	Site
	Other

Administrative Coordinator Start-up Activities (cont'd)

Description of Activity	Name of Designated Lead
Arrange for a dedicated, high-speed copy machine that has collating and stapling capability	HQ
	Site
	Other
Obtain office supplies and consumables for use by the board	HQ
	Site
	Other
Arrange after-hours access to site and work space, and assume responsibility for all keys/cards provided by the site	HQ
	Site
	Other
Prepare and maintain the interview schedule	HQ
	Site
	Other
Create and maintain accident investigation files	HQ
	Site
	Other
Arrange for an area central to work space to locate documents, lockable file cabinets, high-speed copy machine, large-volume document shredder(s), and fax machine	HQ
	Site
	Other

Equipment Checklist

Checklist		Notes
Document Packet		
DOE Order 225.1A, <i>Accident Investigations</i>		
Implementation Guide for use with DOE Order 225.1A		
Chairperson Day Planner		
DOE Workbook: Conducting Accident Investigations		
Accident Investigation Preliminary Interview List		
Witness Statement Form		
Change Analysis Form		
Barrier Analysis Form		
Site Documents		
Organization charts		
Facility maps		
Applicable blueprints and as-built drawings		
Policies and procedures manuals		
ES&H manuals		
Training manuals		
Phone books (local, facility, and HQ)		

Equipment Checklist (cont'd)

Checklist		Notes
Office Supplies		
18 in/out baskets		
Adhesive notes (assorted sizes and colors)		
Adhesive flags (assorted colors)		
Chart paper (1/4" grid)		
12 hard-bound journals		
2 boxes suspension folders		
12 letter-size expandable files		
3 boxes computer disks		
1 box full-page dividers		
8 calendars		
3 boxes pens, red		
3 boxes pens, black		
4 heavy black markers		
1 box yellow highlighters		
1 box pencils (hard)		
12 boxes paper clips		
12 boxes binder clips (assorted)		
1 box rubber bands (assorted)		
1 heavy-duty stapler		
1 box heavy-duty staples		
1 heavy-duty staple remover		
4 boxes staples		
8 desk staplers		
8 staple removers		
8 tape dispensers/tape		
4 scissors		
2 three-hole punch		
2 clipboards		

Equipment Checklist (cont'd)

Checklist	Notes
Office Supplies (cont'd)	
12 three-ring binders – (1", 2", 3")	
2 boxes manila file folders	
Assorted file folder labels	
Overnight mailing supplies	
12 phone message pads	
6 bottles all-purpose correction fluid	
Assorted envelopes (9" x 12", 5" x 7", 10" x 13")	
DOE-HQ memorandum letterhead	
24 ruled notepads	
12 steno pads	
3" x 5" index cards	
Return address labels	
Packing boxes	
5 boxes double-pocket portfolio (assorted colors)	
Nylon filament tape	
Office Equipment	
Telephones	
Answering machine or voice mail capability	
Computers/software	
Letter-quality printers	
Camera with flash	
Film	
Portable cellular phone	
50 3.5" formatted diskettes with labels	

Equipment Checklist (cont'd)

Checklist		Notes
Office Equipment (cont'd)		
Pagers (beepers)		
Fax machine		
Cassette tape recorder, cassettes, and batteries		
High-speed photocopier (multifunction)		
Document shredder		
Electric pencil sharpener		
Tools		
Flashlight or lantern (explosion-proof)		
Spare batteries and bulb for flashlight		
Steel tape measure – 100 ft.		
Scale – 12-inch ruler		
Scissors (heavy-duty)		
Compass – professional type (e.g., MILSPEC Lensatic or surveyor's)		
Magnifying glass		
Inspection mirrors – large and small dental		
Toothbrush – natural bristle		
Twine – 300 ft. package wrapping		
Cardboard tags, string		
Masking tape (2-inch)		

Equipment Checklist (cont'd)

Checklist		Notes
Special Devices		
Engineer's scale		
Metric conversions		
Calculators		
Calipers, inside and outside diameter		
Personal Protection Equipment		
Hard hats		
First aid kit		
Glasses, other eye protection		
Gloves, leather or canvas		
Ear plugs, other hearing protection		
Vest, orange flagperson's		
Steel-toed boots or shoes		
Dust masks, respirators		
Other		

This list is not exhaustive or limiting. Use this checklist as a starting point and add or delete items as needed.

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FOIA/PA General Information, MA-73	
U.S. Department of Energy	
1000 Independence Ave., SW	
Washington, DC 20585	
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Dennis Vernon, EH-21	
DOE Accident Investigation Program Manager	
19901 Germantown Road	
Germantown, MD 20874-1290	
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